EXHIBIT B

Pitney Bowes

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March 17, 2003

Nate Levin, Esquire
Buckley, Maschoff, Talwalkar & Allison LLC
Five Elm Street
New Canaan, CT 06840

RE: **F-660 -Invention Disclosures 9244 and 9288**
"Ink Spectral Encoding Tied to Information in Indicia"

Dear Nate:

Enclosed are copies of the referenced Invention Disclosure. Also enclosed are copies of prior art U.S. Patent 6,070,805 and 6,256,638B1.

Please prepare a patent application on the enclosed disclosure. The patentability of the invention is in producing ink that has a certain spectral code, i.e., 1379. The user of the invention or an ink cartridge enters the spectral code into a device, i.e., computer, postage meter, etc. Then the device prints cryptographic indicia that includes the spectral code. If someone wanted to copy the indicia, they would have to reconstruct the ink with the same spectral code and match the ink's spectral code with the spectral code in the indicia.

A reader would read the indicia and compare the spectral code cryptographically stored in the indicia with the spectral code of the ink. The spectral code may be produced in real time by controlling the printing process, i.e., mixing the ink in predetermined portions, i.e., 25% yellow; 25% blue; and 50% red, etc.

If you have any questions, please contact the inventor, Judith Auslander at 203-924-3099 or me.

Best regards,

Ron

Ronald Reichman

RR/eal
Enclosures

Copy: Charles R. Malandra
Judith Auslander

(10013619.1)

CRM / KAR / ACT

Pitney Bowes **INVENTION DISCLOSURE**

DISCLOSURE NUMBER 92446

PITNEY BOWES CONFIDENTIAL

Submitted By: (Full Names)	Department:
Jim Euchner	

Title of the Disclosure:

INK SPECTRAL ENCODING TIED TO INFORMATION IN INDICIA

INSTRUCTIONS: Submitter(s) must (1) describe the invention by responding to each of the items below (attachments are acceptable with a completed form); (2) sign the completed form and have it witnessed at the end of the form; (3) send the signed form with attachments directly to the Intellectual Property and Technology Law Department (MSC 26-22); and (4) send an electronic copy of the completed form to "IP&TL Department".

1. IDENTIFY CO-INVENTOR(S) [FULL NAME(S)]:

2. DISCUSS THE PROBLEM SOLVED BY THE INVENTION AND DESCRIBE THE OLD METHOD OF SOLVING THE PROBLEM:

3. HOW DOES THE INVENTION SOLVE THE PROBLEM?

4. THE IDEA OF THE INVENTION WAS SUGGESTED BY THE FOLLOWING FACTORS:

5. THE IDEA OF THE COMPLETE INVENTION, INCLUDING ALL ESSENTIALS FOR PRACTICING THE INVENTION, BECAME CLEAR ON (date):

6. THE INVENTION WAS FIRST DISCLOSED TO Bob Cordery et al. see e-mail ON September 11, 2001

7. IDENTIFY THE PITNEY BOWES PRODUCT OR PROJECT RELATING TO THE INVENTION:

8. INVENTION CONSTRUCTION COMPLETED ON BY WHOM

TESTED ON BY WHOM

9. FIRST USE, SALE, OR DISCLOSURE OF THE INVENTION OUTSIDE PITNEY BOWES:

DATE: BY/TO WHOM:

10. IF THE INVENTION HAS BEEN OR WILL BE DESCRIBED IN PUBLICATIONS, REPORTS, PRESENTATIONS OR PROPOSALS MADE OR AVAILABLE OUTSIDE OF PITNEY BOWES, GIVE NAME, NUMBER AND DATE SENT OUT:

11. LIST PRIOR ART THAT YOU ARE AWARE OF:

12. ATTACH RELEVANT DOCUMENTATION, ie: memos, notes, and drawings.

13. BRIEF ABSTRACT OF INVENTION:

From Euchner's e-mail of [redacted]

Please see attached.

---------- Forwarded by James A Euchner/MSD/US/PBI on 11/27/2001 10:38 AM ----------

To: Robert Cordery/MSD/US/PBI, Judith Auslander/MSD/US/PBI, Claude Zeller <zellerpb@earthlink.net>, Rick Ryan/MSD/US/PBI
cc:

Subject: ink idea

Here's my idea for duplicate fraud prevention using the spectral characteristics of inks:

1. use Plain Site's ink encoding scheme to encode an ink (e.g. ink A encodes to 13579)
2. print a 2D bar code with the code (e.g. 13579) encrypted (along with other information)
3. develop a reader that
   - reads the spectral characteristics of the ink
   - translates the ink spectra into a code
   - reads the bar code
   - decodes the information in the bar code
   - compares the ink spectra code (e.g. 13579) with the barcode code (also 13579)
   - if the same: printed with the original contolled printer (not a duplicate)

Disclosure Number 92446

4. a meter or other secure printing dev.) such that the ink spectral code (encoded, so the information is not in the clear) is input into the meter when a new ink cartridge is added OR a spectrometer reads the ink spectra and translates it into the ink code
5. this code is then included in the 2D bar code.

This would have a similar effect as a fragile watermark in preventing duplicates printed with a non-secure printer (even the Y-attack)

Do you see any issues with this?

Thanks.

Jim

14. ADVANTAGES OF INVENTION:

15. DETAILED DESCRIPTION OF THE INVENTION. Describe your invention in sufficient detail so that a person who is technically competent, but who may not be familiar with your line of work, will be able to understand it. Exact values of components and measurements, if not available, are not required, but you must give sufficient information to allow someone to make and use the invention without undue experimentation, ie: block diagrams, flow charts, examples, etc.

16. ALTERNATE APPROACHES. Evaluate your invention. If you see other new and useful ways of accomplishing the same ends, state them briefly.

SUBMITTER(S) SIGN AND DATE BELOW

Submitter's full signature:	Date:	**Read and understood by:** Signature of Witness:	Date:
Submitter's full signature:	Date:	Signature of Witness:	Date:
Submitter's full signature:	Date:		
Submitter's full signature:	Date:		

Judith Auslander
[redacted] 05:13 PM

To: Chuck Malandra/MSD/US/PBI
cc: James A Euchner/MSD/US/PBI

Subject: addition to the spectral encoding

Jim, Chuck,

I am adding additional thoughts to Jim's concept on the spectral encoding.

- to encode in an ink a spectral code represented by a combination of spectral features : color, fluorescence, IR absorption that can be discriminated by the detector and by the mathematical analysis.
- Print bar codes with this ink and encrypt the ink code along with the rest of the information
- decode both with two different scanners: one for machine readability of the symbology :bar code, watermark, glyphs with monochrome printing and second a portable spectrophotometer or fluorometer that can read on line the ink code based on well defined ink features : visible absorbance, fluorescence, IR absorbance, etc.
- validate that the codes read by the two different scanners match .

This procedure eliminates the need for a separate data base that has to be stored and maintained by a third party for authentication.
I see the following way in reducing this concept to practice realistically :

- the ink spectral code is being created in real time by a printer by combination of 5 inks (today in the new desk top printer for maximum gray levels there are 5 generic inks available : cyan, magenta, yellow, light magenta and light cyan. ,Therefore theoretically we may obtain 5n combinations of various inks by using n different concentrations for the various colored inks.
- bar code can be printed on demand in two different ways :

1. uniform by a mixture of colors or colors and fluorescent taggers when all modules are identical. Examples are : dark blue, green, purple, red when the color mixtures are located mainly at the outer zone of the color space (higher saturation)
2. non uniform by combining different mixtures on different modules in the same bar code and thus encoding more information
3. use metameric dyes (similar colors but different spectra)
4.

Judith Auslander [redacted]

Pitney Bowes

INVENTION DISCLOSURE

DISCLOSURE NUMBER 9288

KAR/RR/ACT

Submitted By: (Full Names)	Department:	Page ____ of ____
JUDITH AUSLANDER	ACT	

Title of the Disclosure:

INK SPECTRAL ENCODING TIED TO INFORMATION IN INDICIA (addendum to ID 9244)

The herein described invention is submitted. Submitter(s) sign the reverse of this form and attached 19221A form. Use form 19221A to complete items 1-17 on this form and send all forms with attachments directly to the Intellectual Property and Technology Law Department (MSC 22-26).

1. IDENTIFY CO-INVENTOR(S) (FULL NAME(S)): ~~JOSEPH EVERHART~~

2. DISCUSS THE PROBLEM SOLVED BY THE INVENTION AND DESCRIBE THE OLD METHOD OF SOLVING THE PROBLEM: The problem that presently exists is the necessity of connecting a meter to a data center in order to authenticate the indicia

3. HOW DOES THE INVENTION SOLVE THE PROBLEM? This invention solves the problem by providing spectral characteristics that will be unique for a specific indicia. The ink spectral encoding is tied to information in the indicia.

4. THE IDEA OF THE INVENTION WAS SUGGESTED BY THE FOLLOWING FACTORS: ____

5. THE IDEA OF THE COMPLETE INVENTION, INCLUDING ALL ESSENTIALS, FOR PRACTICING THE INVENTION BECAME CLEAR ON (date): ____

6. THE INVENTION WAS FIRST DISCLOSED TO ____ ON ____

7. IDENTIFY THE PITNEY BOWES PRODUCT OR PROJECT RELATING TO THE INVENTION: ____

8. INVENTION CONSTRUCTION COMPLETED ON ____ BY WHOM ____
TESTED ON ____ BY WHOM ____

9. USE, SALE, OR DISCLOSURE OUTSIDE PITNEY BOWES (date): ____
IN USE OR SOLD SINCE ____ USE OR SALE EXPECTED: ____

10. IF THE INVENTION HAS BEEN OR WILL BE DESCRIBED IN PUBLICATIONS, REPORTS, PRESENTATIONS OR PROPOSALS MADE OR AVAILABLE OUTSIDE OF PITNEY BOWES, GIVE NAME, NUMBER AND DATE SENT OUT:

11. LIST PRIOR ART THAT YOU ARE AWARE OF: ____

12. ATTACH RELEVANT DOCUMENTATION, ie: memos, notes, drawings.

13. BRIEF ABSTRACT OF INVENTION:

This invention disclosure describes a method of printing a secure indicia with a specific combination of varying colors of inks in situ. By creating unique spectral mixtures on demand, each printed indicia will have a unique spectral "fingerprint." Each indicia will use varying amounts of individual colors from each of the available colors in the printer.

Disclosure Number 9288

ID 9244: INK SPECTRAL ENCODING TIED TO INFORMATION IN INDICIA

Notes from meeting with J. Auslander [redacted]

Key feature of using ink spectral encoding tied to information in the indicia: a data center would not be needed in order to authenticate the indicia.

The inks that are created need:

1) to exhibit readability: there needs to be a >30% contrast of the printed barcode with the substrate background. The color that is printed is required to be read as a bar-code as a monochrome impression. The barcode would require a **REGULAR SCANNER** to read the contrast of the print reflective difference. The problem in reading a barcode is that the ink needs to have the contrast; for example, light pink, light yellow inks will not be readable with this scanner. The barcode needs to be read independently of the spectral colors.
   a) Possible solution: increase the number of ink components.

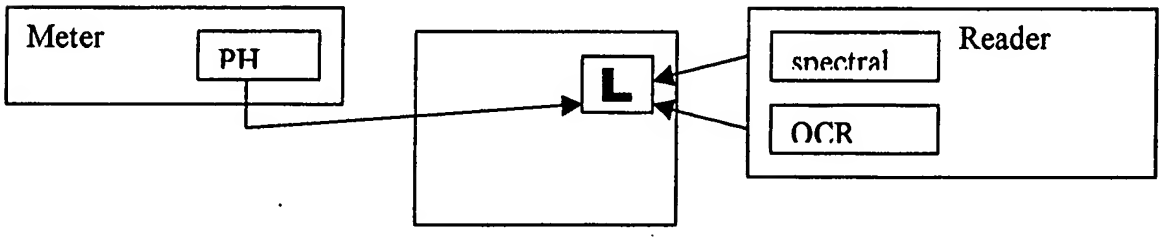
2) To be read by a **SPECTROMETER** that will read the properties of the colored dies. Read the RGB values of the composite colors to measure the level of resolution of reading of the spectrometer in order to differentiate the components in a composite color.

There could be one reader with two detectors to read the barcode and the optical characteristics.

Different ways to change the optical characteristics:

1) vary the spectral mixture
2) vary the fluorescence or color
3) over righting one color on another

There needs to be a handshake between the COLOR and the READING of the information from the regular scanner.



Judd Auslander

J. Euchner describes the use of an encoding scheme (Plain Site) that will encode ink. The encoding of the ink will be based upon the spectral features of colors that creates one final color that is printed. For example, the ink may contain varied amounts of up to five different inks.

J. Auslander discusses the method of printing the ink and creating the unique spectral mixture on demand – in situ.

The mixture of the color is done as the barcode is being printed. Instead of combining the colors to create a combination black ink ahead of time, the different colors are mixed differently for each indicia to create a unique "fingerprint" based upon the varying amounts of color from each of the colors.

SEARCH:
Multicolor barcodes
HP- patents on mixing colors
SYMBOL

CRM stated that the following is needed:
1)create algorithm – at the front end and at the verification end to identify how the amounts of the colors as well as the spectral characteristics are identified.
2)reader

Dottie Auslander